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$  * * * * * * * * * * * * * STN  Columbus  * * * * * * * * * * * * * * *

FILE 'HOME' ENTERED AT 12:39:22 ON 08 JAN 2004

=> fil .bec
COST IN U.S. DOLLARS                                    SINCE FILE      TOTAL
                                                           ENTRY    SESSION
FULL ESTIMATED COST                                         0.21       0.21

FILES 'MEDLINE, SCISEARCH, LIFESCI, BIOTECHDS, BIOSIS, EMBASE, HCAPLUS, NTIS,
       ESBIOBASE, BIOTECHNO, WPIDS' ENTERED AT 12:39:36 ON 08 JAN 2004
ALL COPYRIGHTS AND RESTRICTIONS APPLY.  SEE HELP USAGETERMS FOR DETAILS.

11 FILES IN THE FILE LIST

=> vitro(8a)sialyl?
VITRO(8A)SIALYL? IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> s vitro(8a)sialyl?
FILE 'MEDLINE'
        746576 VITRO
          6542 SIALYL?
L1          94 VITRO(8A)SIALYL?

FILE 'SCISEARCH'
        367950 VITRO
          6705 SIALYL?
L2          76 VITRO(8A)SIALYL?

FILE 'LIFESCI'
        175648 VITRO
          1615 SIALYL?
L3          26 VITRO(8A)SIALYL?

FILE 'BIOTECHDS'
         21733 VITRO
           403 SIALYL?
L4            5 VITRO(8A)SIALYL?

FILE 'BIOSIS'
        596520 VITRO
          7315 SIALYL?
L5          105 VITRO(8A)SIALYL?

FILE 'EMBASE'
        902542 VITRO
          6182 SIALYL?
L6          98 VITRO(8A)SIALYL?

FILE 'HCAPLUS'
        551012 VITRO
          8083 SIALYL?
L7         122 VITRO(8A)SIALYL?

FILE 'NTIS'
          8531 VITRO
            18 SIALYL?
L8            0 VITRO(8A)SIALYL?

FILE 'ESBIOBASE'
        164888 VITRO
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          2703 SIALYL?
L9          47 VITRO(8A)SIALYL?

FILE 'BIOTECHNO'
        253158 VITRO
          3202 SIALYL?
L10         58 VITRO(8A)SIALYL?

FILE 'WPIDS'
         19268 VITRO
           410 SIALYL?
L11           5 VITRO(8A)SIALYL?

TOTAL FOR ALL FILES
L12         636 VITRO(8A) SIALYL?

=> s l12 not 1998-2004/py
FILE 'MEDLINE'
       2976938 1998-2004/PY
L13           65 L1 NOT 1998-2004/PY

FILE 'SCISEARCH'
       5861045 1998-2004/PY
L14           41 L2 NOT 1998-2004/PY

FILE 'LIFESCI'
        617203 1998-2004/PY
L15           16 L3 NOT 1998-2004/PY

FILE 'BIOTECHDS'
        103353 1998-2004/PY
L16            4 L4 NOT 1998-2004/PY

FILE 'BIOSIS'
       3254024 1998-2004/PY
L17           70 L5 NOT 1998-2004/PY

FILE 'EMBASE'
       2634784 1998-2004/PY
L18           66 L6 NOT 1998-2004/PY

FILE 'HCAPLUS'
       5488494 1998-2004/PY
L19           79 L7 NOT 1998-2004/PY

FILE 'NTIS'
        117194 1998-2004/PY
L20            0 L8 NOT 1998-2004/PY

FILE 'ESBIOBASE'
       1701422 1998-2004/PY
L21           19 L9 NOT 1998-2004/PY

FILE 'BIOTECHNO'
        724097 1998-2004/PY
L22           36 L10 NOT 1998-2004/PY

FILE 'WPIDS'
       4772772 1998-2004/PY
L23            0 L11 NOT 1998-2004/PY

TOTAL FOR ALL FILES
L24          396 L12 NOT 1998-2004/PY
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=> dup rem l24
PROCESSING COMPLETED FOR L24
L25         113 DUP REM L24 (283 DUPLICATES REMOVED)

=> d tot

L25   ANSWER 1 OF 113  BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
TI    Novel murine alpha-(1,3)-fucosyltransferase(s);
        mouse recombinant alpha-(1,3)-fucosyltransferase production and gene
        expression in host cell for use in an immunoassay and e.g.
        antiinflammatory drug screening
AU    Natsuka S; Gersten K M; Lowe J B
AN    1997-12664  BIOTECHDS
PI    WO 9732889 12 Sep 1997

L25  ANSWER 2 OF 113  HCAPLUS  COPYRIGHT 2004 ACS on STN
TI   Valency Dependent Patterns of Binding of Human L-Selectin toward Sialyl
     and Sulfated Oligosaccharides of LEa and LEx Types: Relevance to
     Anti-Adhesion Therapeutics
SO   Biochemistry (1997), 36(17), 5260-5266
     CODEN: BICHAW; ISSN: 0006-2960
AU   Galustian, Christine; Childs, Robert A.; Yuen, Chun-Ting; Hasegawa, Akira;
     Kiso, Makoto; Lubineau, Andre; Shaw, Gray; Feizi, Ten
AN   1997:238357  HCAPLUS
DN   126:287729

L25  ANSWER 3 OF 113  SCISEARCH  COPYRIGHT 2004 THOMSON ISI on STN DUPLICATE 1
TI   Synthesis of C-13 enriched sialyllactones and their characterization using
     isotope edited inverse detected NMR spectroscopy
SO   TETRAHEDRON LETTERS, (17 MAR 1997) Vol. 38, No. 11, pp. 1865-1868.
     Publisher: PERGAMON-ELSEVIER SCIENCE LTD, THE BOULEVARD, LANGFORD LANE,
     KIDLINGTON, OXFORD, ENGLAND OX5 1GB.
     ISSN: 0040-4039.
AU   Gervay J (Reprint); Mamuya N N; Barber R A
AN   97:227865  SCISEARCH

L25  ANSWER 4 OF 113     MEDLINE on STN                  DUPLICATE 2
TI   Generation of constitutive and inducible trans-sialylation
     dominant-negative phenotypes in Trypanosoma brucei and Trypanosoma cruzi.
SO   GLYCOBIOLOGY, (1997 Oct) 7 (7) 955-64.
     Journal code: 9104124. ISSN: 0959-6658.
AU   Engstler M; Wirtz E; Cross G A
AN   1998029865     MEDLINE

L25  ANSWER 5 OF 113     MEDLINE on STN                  DUPLICATE 3
TI   Identification of rat alpha1 macroglobulin as an inhibitor of rat
     Galbeta1-4GlcNAc alpha2-6 sialyltransferase.
SO   GLYCOBIOLOGY, (1997 Sep) 7 (6) 791-801.
     Journal code: 9104124. ISSN: 0959-6658.
AU   Harder P G; Jamieson J C
AN   1998020918     MEDLINE

L25  ANSWER 6 OF 113     MEDLINE on STN                  DUPLICATE 4
TI   Characterization of posttranslational modifications of human A33 antigen,
     a novel palmitoylated surface glycoprotein of human gastrointestinal
     epithelium.
SO   BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS, (1997 Jul 30) 236 (3)
     682-6.
     Journal code: 0372516. ISSN: 0006-291X.
AU   Ritter G; Cohen L S; Nice E C; Catimel B; Burgess A W; Moritz R L; Ji H;
     Heath J K; White S J; Welt S; Old L J; Simpson R J
AN   97396159     MEDLINE

L25  ANSWER 7 OF 113     MEDLINE on STN                  DUPLICATE 5
```

TI In **vitro** experimental studies of **sialyl** Lewis x and **sialyl** Lewis a on endothelial and carcinoma cells: crucial glycans on selectin ligands.
SO GLYCOCONJUGATE JOURNAL, (1997 Aug) 14 (5) 593-600. Ref: 105
Journal code: 8603310. ISSN: 0282-0080.
AU Renkonen R; Mattila P; Majuri M L; Rabina J; Toppila S; Renkonen J; Hirvas L; Niittymaki J; Turunen J P; Renkonen O; Paavonen T
AN 97442143 MEDLINE

L25 ANSWER 8 OF 113 MEDLINE on STN DUPLICATE 6
TI Mouse beta-galactoside alpha 2,3-**sialyltransferases**: comparison of in **vitro** substrate specificities and tissue specific expression.
SO GLYCOBIOLOGY, (1997 Jun) 7 (4) 469-79.
Journal code: 9104124. ISSN: 0959-6658.
AU Kono M; Ohyama Y; Lee Y C; Hamamoto T; Kojima N; Tsuji S
AN 97328289 MEDLINE

L25 ANSWER 9 OF 113 HCAPLUS COPYRIGHT 2004 ACS on STN
TI Egg yolk sialyloligosaccharides and their inhibitory effects of rotavirus infection
SO Shokuhin Sangyo Senta Gijutsu Kenkyu Hokoku (1997), 23, 7-15
CODEN: SSGHD6; ISSN: 0388-3388
AU Anon.
AN 1998:144479 HCAPLUS
DN 128:241944

L25 ANSWER 10 OF 113 HCAPLUS COPYRIGHT 2004 ACS on STN
TI Preparation of sialic acid derivative as sialic acid transferase inhibitor
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
IN Ibuki, Hiroshi; Tashiro, Yukihisa; Tsuji, Shuichi; Hamamoto, Toshiro
AN 1996:621341 HCAPLUS
DN 125:276440

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 08198892	A2	19960806	JP 1995-8527	19950123

L25 ANSWER 11 OF 113 HCAPLUS COPYRIGHT 2004 ACS on STN
TI Preparation of sialic acid derivative as sialic acid transferase inhibitor
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
IN Ibuki, Hiroshi; Tashiro, Yukihisa; Tsuji, Shuichi; Hamamoto, Toshiro
AN 1996:623052 HCAPLUS
DN 125:276439

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 08198891	A2	19960806	JP 1995-8526	19950123

L25 ANSWER 12 OF 113 MEDLINE on STN DUPLICATE 7
TI Molecular cloning and characterization of CFT1, a developmentally regulated avian alpha(1,3)-fucosyltransferase gene.
SO JOURNAL OF BIOLOGICAL CHEMISTRY, (1996 Dec 20) 271 (51) 32960-7.
Journal code: 2985121R. ISSN: 0021-9258.
AU Lee K P; Carlson L M; Woodcock J B; Ramachandra N; Schultz T L; Davis T A; Lowe J B; Thompson C B; Larsen R D
AN 97115837 MEDLINE

L25 ANSWER 13 OF 113 MEDLINE on STN DUPLICATE 8
TI Intra-Golgi transport inhibition by megalomicin.
SO JOURNAL OF BIOLOGICAL CHEMISTRY, (1996 Feb 16) 271 (7) 3719-26.
Journal code: 2985121R. ISSN: 0021-9258.
AU Bonay P; Munro S; Fresno M; Alarcon B
AN 96216477 MEDLINE

L25 ANSWER 14 OF 113 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
TI THE ROLE OF SIALYL-LEWIS-X AND **SIALYL**-LEWIS A IN SQUAMOUS-CELL CARCINOMA METASTASIS IN-**VITRO**
SO FASEB JOURNAL, (08 MAR 1996) Vol. 10, No. 3, pp. 2317.
ISSN: 0892-6638.
AU KATAYOSE Y (Reprint); ABO S; KITAMURA M; MINAMIYA Y
AN 96:223676 SCISEARCH

L25 ANSWER 15 OF 113 MEDLINE on STN DUPLICATE 9
TI Structure/activity studies of anti-inflammatory peptides based on a conserved peptide region of the lectin domain of E-, L- and P-selectin.
SO GLYCOBIOLOGY, (1996 Dec) 6 (8) 831-6.
Journal code: 9104124. ISSN: 0959-6658.
AU Briggs J B; Larsen R A; Harris R B; Sekar K V; Macher B A
AN 97175971 MEDLINE

L25 ANSWER 16 OF 113 MEDLINE on STN DUPLICATE 10
TI Novel synthetic analogs of **sialyl** Lewis X can inhibit angiogenesis in **vitro** and in vivo.
SO BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS, (1996 Nov 21) 228 (3) 716-23.
Journal code: 0372516. ISSN: 0006-291X.
AU Nguyen M; Eilber F R; Defrees S
AN 97096320 MEDLINE

L25 ANSWER 17 OF 113 HCAPLUS COPYRIGHT 2004 ACS on STN
TI Novel carbohydrate analogs can inhibit angiogenesis in vitro and in vivo
SO Surgical Forum (1996), 47, 529-531
CODEN: SUFOAX; ISSN: 0071-8041
AU Nguyen, Mai; Defrees, Shawn; Paulson, James; Eilber, Frederick R.
AN 1996:723229 HCAPLUS
DN 126:844

L25 ANSWER 18 OF 113 MEDLINE on STN DUPLICATE 11
TI Hyperthermia decreases cytokine-mediated adhesion molecule expression on human umbilical vein endothelial cells.
SO INTERNATIONAL JOURNAL OF HYPERTHERMIA, (1996 Jul-Aug) 12 (4) 527-38.
Journal code: 8508395. ISSN: 0265-6736.
AU Brand K; Lubbe A S; Justus D J
AN 97031551 MEDLINE

L25 ANSWER 19 OF 113 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
TI Genetically engineered synthesis of natural products; genetic engineering application in the production of e.g. recombinant cofactor, enzyme, carbohydrate alkaloid, porphyrin, etc.; a review
SO Annu.Rev.Microbiol.; (1996) 50, 467-90
CODEN: ARMIAZ ISSN: 0066-4227
AU Roessner C A; Scott A I
AN 1996-14521 BIOTECHDS

L25 ANSWER 20 OF 113 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN
TI The role of Sialyl Lewis X and **Sialyl** Lewis A in squamous cell carcinoma metastasis in **vitro.**
SO FASEB Journal, (1996) Vol. 10, No. 3, pp. A401.
Meeting Info.: Experimental Biology 96, Part I. Washington, D.C., USA. April 14-17, 1996.
CODEN: FAJOEC. ISSN: 0892-6638.
AU Katayose, Y.; Abo, S.; Kitamura, M.; Minamiya, Y.
AN 1996:209444 BIOSIS

L25 ANSWER 21 OF 113 MEDLINE on STN DUPLICATE 12
TI Phenotypes correlating to metastatic properties of pancreas adenocarcinoma in vivo: the importance of surface sialyl Lewis(a) antigen.

SO INTERNATIONAL JOURNAL OF CANCER, (1996 Aug 22) 69 (4) 290-4.
Journal code: 0042124. ISSN: 0020-7136.
AU Kishimoto T; Ishikura H; Kimura C; Takahashi T; Kato H; Yoshiki T
AN 96390897 MEDLINE

L25 ANSWER 22 OF 113 MEDLINE on STN DUPLICATE 13
TI E-selectin: sialyl Lewis, a dependent adhesion of colon cancer cells, is inhibited differently by antibodies against E-selectin ligands.
SO SCANDINAVIAN JOURNAL OF IMMUNOLOGY, (1996 Sep) 44 (3) 197-203.
Journal code: 0323767. ISSN: 0300-9475.
AU Srinivas U; Pahlsson P; Lundblad A
AN 96388311 MEDLINE

L25 ANSWER 23 OF 113 HCAPLUS COPYRIGHT 2004 ACS on STN
TI Mimics of sialyl lewis X: Design, synthesis and biological activity of a series of malonate-substituted galactocerebrosides.
SO Book of Abstracts, 212th ACS National Meeting, Orlando, FL, August 25-29 (1996), MEDI-132 Publisher: American Chemical Society, Washington, D. C. CODEN: 63BFAF
AU Marinier, A.; Plamondon, S.; Martel, A.; Bachand, C.; Lapointe, P.; Daris, J. -P.; Dextraze, P.; Ouellet, C.; Menard, M.; et al.
AN 1996:414720 HCAPLUS

L25 ANSWER 24 OF 113 MEDLINE on STN DUPLICATE 14
TI Structural characterization of the major glycosylphosphatidylinositol membrane-anchored glycoprotein from epimastigote forms of Trypanosoma cruzi Y-strain.
SO JOURNAL OF BIOLOGICAL CHEMISTRY, (1995 Mar 31) 270 (13) 7241-50.
Journal code: 2985121R. ISSN: 0021-9258.
AU Previato J O; Jones C; Xavier M T; Wait R; Travassos L R; Parodi A J; Mendonca-Previato L
AN 95221376 MEDLINE

L25 ANSWER 25 OF 113 MEDLINE on STN DUPLICATE 15
TI Changes in the **sialylglycoconjugate** distribution on the human sperm surface during in-**vitro** capacitation: partial purification of a 20 kDa **sialylglycoprotein** of capacitated spermatozoa.
SO HUMAN REPRODUCTION, (1995 Oct) 10 (10) 2755-9.
Journal code: 8701199. ISSN: 0268-1161.
AU Focarelli R; Giuffrida A; Rosati F
AN 96160533 MEDLINE

L25 ANSWER 26 OF 113 MEDLINE on STN DUPLICATE 16
TI Recognition of consensus CHO structure in ligands for selectins by novel antibody against sialyl Lewis X.
SO AMERICAN JOURNAL OF PHYSIOLOGY, (1995 Oct) 269 (4 Pt 2) H1282-7.
Journal code: 0370511. ISSN: 0002-9513.
AU Tamatani T; Suematsu M; Tezuka K; Hanzawa N; Tsuji T; Ishimura Y; Kannagi R; Toyoshima S; Homma M
AN 96043454 MEDLINE

L25 ANSWER 27 OF 113 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN
TI RECOGNITION OF CONSENSUS CHO STRUCTURE IN LIGANDS FOR SELECTINS BY NOVEL ANTIBODY AGAINST SIALYL-LEWIS-X
SO AMERICAN JOURNAL OF PHYSIOLOGY-HEART AND CIRCULATORY PHYSIOLOGY, (OCT 1995) Vol. 38, No. 4, pp. H1282-H1287.
ISSN: 0363-6135.
AU TAMATANI T (Reprint); SUEMATSU M; TEZUKA K; HANZAWA N; TSUJI T; ISHIMURA Y
AN 95:724124 SCISEARCH

L25 ANSWER 28 OF 113 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN DUPLICATE 17
TI MOLECULAR-CLONING AND CHARACTERIZATION OF A 3RD TYPE OF N-GLYCAN ALPHA-2,8-SIALYLTRANSFERASE FROM MOUSE LUNG

SO JOURNAL OF BIOCHEMISTRY, (SEP 1995) Vol. 118, No. 3, pp. 658-664.
ISSN: 0021-924X.
AU YOSHIDA Y; KOJIMA N; TSUJI S (Reprint)
AN 95:613524 SCISEARCH

L25 ANSWER 29 OF 113 MEDLINE on STN DUPLICATE 18
TI n-Butyrate mediation of ganglioside expression of human and murine cancer cells demonstrates relative cell specificity.
SO CLINICAL SCIENCE, (1995 Apr) 88 (4) 491-9.
Journal code: 7905731. ISSN: 0143-5221.
AU Berenson C S; Patterson M A; Miqdadi J A; Lance P
AN 95308897 MEDLINE

L25 ANSWER 30 OF 113 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN DUPLICATE 19
TI HIGH ALPHA-2,6-SIALYLATION OF N-ACETYLLACTOSAMINE SEQUENCES IN RAS-TRANSFORMED RAT FIBROBLASTS CORRELATES WITH HIGH INVASIVE POTENTIAL
SO GLYCOBIOLOGY, (MAR 1995) Vol. 5, No. 2, pp. 219-226.
ISSN: 0959-6658.
AU LEMARER N (Reprint); STEHELIN D
AN 95:246450 SCISEARCH

L25 ANSWER 31 OF 113 HCAPLUS COPYRIGHT 2004 ACS on STN
TI In **vitro** degradation of a **sialyl**-oligosaccharide derivative by hydroxy radical
SO Carbohydrate Letters (1995), 1(3), 199-206
CODEN: CLETEC; ISSN: 1073-5070
AU Koketsu, Mamoru; Suzuki, Rhoko; Nishikawa, Shiro; Kashimura, Naoki
AN 1996:337349 HCAPLUS
DN 125:115018

L25 ANSWER 32 OF 113 HCAPLUS COPYRIGHT 2004 ACS on STN
TI Rational design and synthesis of oligosaccharide mimetics: Selectin antagonists as cell adhesion inhibitors.
SO Book of Abstracts, 210th ACS National Meeting, Chicago, IL, August 20-24 (1995), Issue Pt. 2, MEDI-018 Publisher: American Chemical Society, Washington, D. C.
CODEN: 61XGAC
AU Kogan, T. P.; Dupre, B.; Beck, P. J.; Bjercke, R.; Sherwood, S.; Tilton, R. G.
AN 1995:924282 HCAPLUS

L25 ANSWER 33 OF 113 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
TI Scaled-up expression of human alpha-2,6(N)-sialyltransferase in Saccharomyces cerevisiae;
scale-up of human recombinant beta-galactoside-alpha-2,6-sialyltransferase production; potential application in sialyl-oligosaccharide production
SO Biochem.Biophys.Res.Commun.; (1995) 210, 1, 14-20
CODEN: BBRCA9 ISSN: 0006-291X
AU Borsig L; Ivanov S X; Herrmann G F; Kragl U; Wandrey C; Berger E G
AN 1995-07927 BIOTECHDS

L25 ANSWER 34 OF 113 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN
TI Eukaryotic neurocan protein with epidermal growth factor, lectin or complement binding activity;
used in diagnosis, therapy or study of hypersensitivity and allergic disease
AN 1994-04403 BIOTECHDS
PI WO 9403601 17 Feb 1994

L25 ANSWER 35 OF 113 HCAPLUS COPYRIGHT 2004 ACS on STN
TI Methods and compositions for treating diseases with enzymes which modify a ligand and/or its receptor

SO PCT Int. Appl., 33 pp.
CODEN: PIXXD2
IN Klock, John C., Jr.
AN 1995:410580 HCAPLUS
DN 122:151352

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 9425061	A1	19941110	WO 1994-US4464	19940422

W: JP
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

L25 ANSWER 36 OF 113 MEDLINE on STN DUPLICATE 20
TI Molecular cloning of a cDNA encoding a novel human leukocyte alpha-1,3-fucosyltransferase capable of synthesizing the sialyl Lewis x determinant.
SO JOURNAL OF BIOLOGICAL CHEMISTRY, (1994 Jun 17) 269 (24) 16789-94.
Journal code: 2985121R. ISSN: 0021-9258.
AU Natsuka S; Gersten K M; Zenita K; Kannagi R; Lowe J B
AN 94266898 MEDLINE

L25 ANSWER 37 OF 113 MEDLINE on STN DUPLICATE 21
TI Differential expression of an E-selectin ligand (SLex) by two Chinese hamster ovary cell lines transfected with the same alpha (1,3)-fucosyltransferase gene (ELFT).
SO JOURNAL OF BIOLOGICAL CHEMISTRY, (1994 Jan 14) 269 (2) 1033-40.
Journal code: 2985121R. ISSN: 0021-9258.
AU Goelz S; Kumar R; Potvin B; Sundaram S; Brickelmaier M; Stanley P
AN 94117402 MEDLINE

L25 ANSWER 38 OF 113 MEDLINE on STN DUPLICATE 22
TI Ganglioside biosynthesis in mouse embryos: sialyltransferase IV and the asialo pathway.
SO JOURNAL OF LIPID RESEARCH, (1994 Jun) 35 (6) 993-1001.
Journal code: 0376606. ISSN: 0022-2275.
AU Seyfried T N; Novikov A M; Irvine R A; Brigande J V
AN 94358649 MEDLINE

L25 ANSWER 39 OF 113 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN DUPLICATE 23
TI E-SELECTIN LIGANDS MEDIATE TUMOR NECROSIS FACTOR-INDUCED NEUTROPHIL SEQUESTRATION AND PULMONARY-EDEMA IN GUINEA-PIG LUNGS
SO CIRCULATION RESEARCH, (DEC 1994) Vol. 75, No. 6, pp. 955-960.
ISSN: 0009-7330.
AU LO S K (Reprint); BEVILACQUA M B; MALIK A B
AN 94:741595 SCISEARCH

L25 ANSWER 40 OF 113 MEDLINE on STN DUPLICATE 24
TI In vitro synthesis of disialoganglioside (GD1 alpha) from asialo-GM1 using sialyltransferases in rat liver Golgi vesicles.
SO EUROPEAN JOURNAL OF BIOCHEMISTRY, (1994 Apr 1) 221 (1) 603-9.
Journal code: 0107600. ISSN: 0014-2956.
AU Hidari K I; Kawashima I; Tai T; Inagaki F; Nagai Y; Sanai Y
AN 94222108 MEDLINE

L25 ANSWER 41 OF 113 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN DUPLICATE 25
TI STRUCTURE-FUNCTION STUDIES OF OLIGOSACCHARIDES OF RECOMBINANT HUMAN THYROTROPIN BY SEQUENTIAL DEGLYCOSYLATION AND RESIALYLATION
SO GLYCOBIOLOGY, (AUG 1994) Vol. 4, No. 4, pp. 525-533.
ISSN: 0959-6658.
AU THOTAKURA N R (Reprint); SZKUDLINSKI M W; WEINTRAUB B D
AN 94:563645 SCISEARCH

L25 ANSWER 42 OF 113 MEDLINE on STN DUPLICATE 26

TI Effect of sialic acid on glycation-induced fluorescence of albumin.
SO ACTA DIABETOLOGICA, (1994 Sep) 31 (3) 156-9.
Journal code: 9200299. ISSN: 0940-5429.
AU Lipovac V; Gavella M; Sverko V
AN 95127996 MEDLINE

L25 ANSWER 43 OF 113 MEDLINE on STN DUPLICATE 27
TI Biosynthesis of oligosaccharides in intact Golgi preparations from rat liver. Analysis of N-linked glycans labeled by UDP-[6-3H]N-acetylglucosamine.
SO JOURNAL OF BIOLOGICAL CHEMISTRY, (1993 Aug 5) 268 (22) 16139-54.
Journal code: 2985121R. ISSN: 0021-9258.
AU Hayes B K; Freeze H H; Varki A
AN 93346350 MEDLINE

L25 ANSWER 44 OF 113 MEDLINE on STN DUPLICATE 28
TI L- and E-selectin can recognize the same naturally occurring ligands on high endothelial venules.
SO JOURNAL OF IMMUNOLOGY, (1993 Sep 15) 151 (6) 3252-60.
Journal code: 2985117R. ISSN: 0022-1767.
AU Mebius R E; Watson S R
AN 93389153 MEDLINE

L25 ANSWER 45 OF 113 MEDLINE on STN DUPLICATE 29
TI Purification and characterization of recombinant human thyrotropin (TSH) isoforms produced by Chinese hamster ovary cells: the role of sialylation and sulfation in TSH bioactivity.
SO ENDOCRINOLOGY, (1993 Oct) 133 (4) 1490-503.
Journal code: 0375040. ISSN: 0013-7227.
AU Szkudlinski M W; Thotakura N R; Bucci I; Joshi L R; Tsai A; East-Palmer J; Shiloach J; Weintraub B D
AN 94008691 MEDLINE

L25 ANSWER 46 OF 113 MEDLINE on STN DUPLICATE 30
TI Cell-specific expression of human beta-galactoside alpha 2,6-sialyltransferase transcripts differing in the 5' untranslated region.
SO EUROPEAN JOURNAL OF BIOCHEMISTRY, (1993 Apr 1) 213 (1) 467-75.
Journal code: 0107600. ISSN: 0014-2956.
AU Aasheim H C; Aas-Eng D A; Deggerdal A; Blomhoff H K; Funderud S; Smeland E B
AN 93238722 MEDLINE

L25 ANSWER 47 OF 113 MEDLINE on STN DUPLICATE 31
TI Effect of culture conditions on IgM antibody structure, pharmacokinetics and activity.
SO BIO/TECHNOLOGY, (1993 Mar) 11 (3) 387-92.
Journal code: 8309273. ISSN: 0733-222X.
AU Maiorella B L; Winkelhake J; Young J; Moyer B; Bauer R; Hora M; Andya J; Thomson J; Patel T; Parekh R
AN 93183475 MEDLINE

L25 ANSWER 48 OF 113 MEDLINE on STN DUPLICATE 32
TI Biosynthesis and regulation of Le(x) and SA-Le(x) glycolipids in metastatic human colon carcinoma cells.
SO INDIAN JOURNAL OF BIOCHEMISTRY AND BIOPHYSICS, (1993 Dec) 30 (6) 324-32.
Journal code: 0310774. ISSN: 0301-1208.
AU Basu M; Basu S S; Li Z; Tang H; Basu S
AN 94274230 MEDLINE

L25 ANSWER 49 OF 113 MEDLINE on STN DUPLICATE 33
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                 (PRY<=1998)
         65308 PY>=2000
                 (PY>=2000)
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         38800 PRY<=1998
       2899019 PY>=2000
L27          0 L7 AND WO/PC AND PRY<=1998 AND PY>=2000

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                 (PRY<=1998)
       2319327 PY>=2000
                 (PY>=2000)
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L25  ANSWER 8 OF 113      MEDLINE on STN                    DUPLICATE 6
AB   Four types of beta-galactoside alpha 2,3-sialyltransferase (ST3Gal I-IV)
     have been cloned from several animals, but some contradictory observations
     regarding their substrate specificities and expression have been reported.
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Therefore, it is necessary to concurrently analyze the substrate specificities of the four enzymes, of which the source should be one animal. Accordingly, the acceptor substrate specificities and gene expression of mST3Gal I-IV were analyzed. Since we had already cloned ST3Gal I and II, as previously reported (Lee, Y.-C. et al., Eur. J. Biochem., 216, 377-385 (1993); J. Biol. Chemical, 269, 10028-10033 (1994)), the cDNAs of ST3Gal III and IV were cloned from mouse cDNA libraries. Each of the four enzymes was expressed in COS-7 cells as a recombinant enzyme fused with protein A, and applied on an IgG-Sepharose gel to eliminate endogenous sialyltransferase activity. ST3Gal I and II showed the highest activity toward Gal beta 1, 3 GalNAc (type III), very low activity toward Gal beta 1,3GlcNAc (type I), but none toward Gal beta 1,4GlcNAc (type II). ST3Gal III and IV exhibited high activity toward the type I and II disaccharides, but very low activity toward the type III one. On the other hand, asialo-GM1 (Gg4Cer) was as good a substrate for ST3Gal I and II as the type III disaccharide, though ST3Gal III and IV hardly utilized glycolipids as substrates, as indicated by in vitro experiments. Northern blot analysis revealed that enzymes of the ST3Gal-family are expressed mainly in a tissue-specific manner. The ST3Gal I gene was strongly expressed in spleen and salivary gland, and weakly in brain, liver, heart, kidney, and thymus. The ST3Gal II gene was strongly expressed in brain, and weakly in colon, thymus, salivary gland, and testis, and developmentally expressed in liver, heart, kidney, and spleen. The ST3Gal III and IV genes were expressed in a wide variety of tissues. These differences in tissue specific expression suggest the expression of each ST3Gal influences the distribution of sialyl-glycoconjugates in vivo.

L25 ANSWER 19 OF 113 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN

AB Recent advances from experiments in which bioorganic chemists have changed their role from spectators of the natural synthesis of complex metabolites to active participants by organic chemistry and genetic engineering are reviewed, and the following points are discussed: 1) cofactor regeneration including nucleoside triphosphates, nicotinamide cofactors, acyl coenzymeA, S-adenosyl methionine,and 3'-phosphoadenosine-5'-phosphosulfate; 2) synthetic design; 3) multienzyme synthesis exemplified: carbohydrate synthesis and catabolism, including sequential 3 and 4 substrate aldol reactions catalyzed by aldolases, synthesis of CDP-D-abequose and **sialyl** T-antigen, and construction of an in **vitro** catabolic pathway; 4) plant secondary metabolites, including isoquinoline alkaloids, and indole alkaloids; 5) enzymatic synthesis of bacterial polyketides; and 6) porphyrins and corrins. One of the main problems encountered during production of recombinant compounds, is to include the development of screening cDNA libraries to allow easy heterologous expression of plant enzymes and the inclusion of a wider variety of enzyme activities. (67 ref)

L25 ANSWER 28 OF 113 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN DUPLICATE 17

AB A cDNA encoding a new alpha 2,8-sialyltransferase (ST8Sia IV), which exhibits activity toward the alpha 2,3-linked sialic acids of N-linked oligosaccharides, was cloned from a mouse lung cDNA library by means of the PCR-based approach, The predicted amino acid sequence of ST8Sia IV showed 15.2, 56.0, and 26.2% identity with those of so far cloned mouse alpha 2,8-sialyltransferases, i.e., GD3 synthase (ST8Sia I), STX (ST8Sia II), and Sia alpha 2,3Gal beta 1-4GlcNAc alpha 2,8-sialyltransferase (ST8Sia III). ST8Sia IV exhibits high amino acid sequence identity (99.2%) with recently cloned hamster polysialyltransferase-1 gene, which is necessary to polysialic acid expression, but no enzymatic activity of the gene product was reported [Eckhardt, M. et al, (1995) Nature 373, 715-7183]. The ST8Sia IV gene was strongly expressed in lung, heart, and spleen, but only weak expression of the gene was observed in brain, without remarkable developmental regulation, The activity of mouse ST8Sia IV was specific toward sialylated glycoproteins, The linkage-specific

sialidase treatment of glycoproteins as well as N-linked oligosaccharides from the glycoproteins revealed that STSSia IV exhibits an alpha 2,8-sialyltransferase activity toward alpha 2,3-linked sialic acids of N-linked oligosaccharides. In addition, STSSia IV can synthesize polysialic acid chain in **vitro** without any initiator **sialyltransferase.**

L25 ANSWER 30 OF 113 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN DUPLICATE 19

AB Through cloning experiments with the FRras EJ4 cell line, previously described to exhibit a Sambucus nigra agglutinin (SNA)+ phenotype, three clones with a SNA- phenotype were isolated, All the selected SNA+ and SNA- clones expressed the ras oncoprotein and cloned in soft agar with the same efficiency. We were interested in studying the adhesion and invasion properties of the FRras cells presenting a SNA + or - phenotype. They were first compared in their biochemical properties and we found that FRras SNA- were characterized by a low alpha-2,6-sialylation of their cell surface glycoproteins and a low beta-galactoside alpha-2,6 **sialyltransferase** activity. Using in **vitro** invasion assays, FRras cells exhibiting a low alpha-2,6-sialylation on their surface were found to have a low invasive potential compared to their counterpart SNA+. FRras SNA- clones exhibit a different morphology from that of FRras SNA+ clones, Moreover, homotypic aggregation assays indicated that FRras SNA- were more cohesive with each other and adhesion assays showed that they were more adhesive to fibronectin.

L25 ANSWER 33 OF 113 BIOTECHDS COPYRIGHT 2004 THOMSON DERWENT/ISI on STN

AB Expression of human full-length recombinant beta-galactoside-alpha-2,6-sialyltransferase (aST, EC-2.4.99.1) was scaled-up in Saccharomyces cerevisiae BT150 in a 150-l fermentor yielding 47U at a concentration of 0.31 U/l. The temperature was maintained at 30 deg and the agitator speed was 500 rpm. Oxygen partial pressure was kept constant at 60% by aeration with air. pH was adjusted to 5 and excessive foaming was prevented by intermittent addition of antifoam. For pilot scale fermentation the glucose concentration was 100 g/l. Inoculation of the 150-l fermentation was 2.6% (v/v). The protein specific activity as measured in reconstituted yeast lyophilizate was 0.8 mU/mg protein. The recombinant enzyme exhibited similar Michaelis constants as previously determined for the native rat enzyme. By immunoblotting the enzyme was demonstrated to be heterogeneous by size (44-48 kDa) and N-glycosylated. In conclusion, recombinant aST expressed in S. cerevisiae is retained in the endoplasmic reticulum as a fully active enzyme. This enzyme could prove useful for the in **vitro** production of **sialyl**-oligosaccharides. (19 ref)

L25 ANSWER 35 OF 113 HCAPLUS COPYRIGHT 2004 ACS on STN

AB The invention provides methods and compns. for the treatment and/or prevention of a variety of disease conditions. The methods involve the administration of an effective amount of a therapeutic catalyst to a patient. A therapeutic catalyst is an enzyme, or other catalyst, capable of catalyzing a chemical reaction employing a carbohydrate or a carbohydrate portion of a glycoconjugate as a substrate. Therapeutic catalysts are selected so as to catalyze reaction that results in the structural alteration of at least one member of a receptor binding pair of mols., whereby the interaction between receptor binding pair members is disrupted. The invention also provides compns. containing therapeutic catalysts for use in the subject methods. Diseases that may be treated by therapeutic catalysts include infections diseases, cancer, and autoimmune diseases. The human α-L-fucosidase and α-sialidase cDNA's were cloned and expressed. The recombinant enzymes destroyed **sialyl**-Lewis X in **vitro.**

L25 ANSWER 40 OF 113 MEDLINE on STN DUPLICATE 24

AB Two gangliosides were efficiently synthesized from asialo-GM1 (Gal beta

1-3GalNAc beta 1-4Gal beta 1-4Glc beta 1-1 Cer) and cytidine 5'-phosphate-N-acetylneuraminic acid (CMP-NeuAc) by using **sialyltransferases** in rat liver Golgi vesicles in **vitro.** These gangliosides were rapidly purified by a combination of anion exchange and reverse-phase column chromatographies. The ganglioside structures were determined by TLC analysis, treatment with a sialidase from Salmonella typhimurium LT2, which specifically hydrolyzes alpha 2-3 N-acetylneuraminic acid (NeuAc alpha 2-3) linkages, TLC immunostaining, and 1H-NMR spectroscopy. One of the gangliosides was identified as GD1 alpha [Neu-Ac alpha 2-3Gal beta 1-3(NeuAc alpha 2-6)GalNAc beta 1-4Gal beta 1-4Glc beta 1-1 Cer]. The other ganglioside was determined to be GM1b (NeuAc alpha 2-3Gal beta 1-3GalNAc beta 1-4Gal beta 1-4Glc beta 1-1 Cer), which has been reported in a previous study [Pohlentz, G., Klein, D., Schmitz, D., Schwarzmann, G., Peter-Katalinic, J. & Sandhoff, K. (1988) Biol. Chemical Hoppe-Seyler 369, 55-63]. Finally, GM1b and GD1 alpha were obtained from asialo-GM1 as a starting material in 8.1% and 1.2% overall yields, respectively. This study also suggests that the novel synthetic pathway asialo-GM1-->GM1b-->GD1 alpha may exist in rat liver.

L25 ANSWER 41 OF 113 SCISEARCH COPYRIGHT 2004 THOMSON ISI on STN DUPLICATE 25

AB Recombinant human thyrotrophin (rhTSH) contains oligosaccharides terminating in -galactose-siahc acid, and had lower metabolic clearance and higher in vivo bioactivity compared to pituitary hTSH, which has oligosaccharides terminating predominantly in -N-acetylgalactosamine-sulphate. Previous studies using complete removal of the oligosaccharide chains showed an important role for the carbohydrate in the biological activity of the hormone. In the present study, we have determined the contribution of the individual monosaccharides to hormonal activity by sequential deglycosylation of rhTSH using exoglycosidases. We have also investigated the effect of resialylation of desialylated rhTSH using sialyltransferases. Sequential removal of sialic acid, galactose or N-acetylglucosamine resulted in a > 10-fold increase in the in vitro bioactivity of rhTSH. The metabolic clearance of the derivatives was faster than that of intact hormone, but agalacto-rhTSH was cleared slower than asialo-rhTSH. However, the in vivo bioactivity decreased progressively with each monosaccharide removal. The increased cyclic AMP-stimulating activity, increased metabolic clearance and the decreased in vivo biologic activity were all reversed by resialylation of the terminal galactose residues. These results indicate that the in vitro, as well as the in vivo, bioactivities of rhTSH are modulated by terminal **sialylation.** The effects of sequential deglycosylation on the in **vitro** activity of rhTSH are different from those reported earlier for human chorionic gonadotrophin. Thus, modification of the oligosaccharides by glycosidases and glycosyltransferases can be used as a powerful tool to delineate the function of carbohydrate in glycoproteins and to engineer more potent hormone analogues with a longer half-life and/or higher bioactivity.

L25 ANSWER 43 OF 113 MEDLINE on STN DUPLICATE 27

AB During short incubations of a Golgi apparatus-enriched subcellular fraction from rat liver with UDP-[3H]GlcNAc, label is efficiently transferred to endogenous acceptors. Most of the macromolecular radioactivity is specifically released by peptide-N4-(N-acetyl-beta-glucosaminyl)asparagine amidase, indicating that it is mainly associated with N-linked oligosaccharides. The glycoprotein acceptors are resistant to proteases unless detergent is added in amounts greater than the critical micellar concentration. This shows that the acceptors are within the lumen of intact compartments, which have the correct topological orientation expected for the Golgi apparatus in intact cells. Structural characterization of the radiolabeled N-linked oligosaccharides shows a variety of distinct neutral and anionic species. The neutral chains include bi-, tri-, and tetra-antennary molecules with terminal beta-[3H]

GlcNAc residues. In **vitro sialylation** shows that some of the tetra-antennary chains have beta 1,3-linked Gal residues on their unlabeled antennae. An unknown modification appears to block the action of beta-galactosidase on these galactosylated oligosaccharides. Chasing the labeling reaction with a mixtures of UDP-Gal, CMP-Neu5Ac, and adenosine 3'-phosphate,5'-phosphosulfate causes an increase in the percent of radiolabeled anionic oligosaccharides. Most of the negative charge is due to sialic acid (Sia), and some appears to be in phosphodiester-linked [3H]GlcNAc. The sialylated oligosaccharides are a mixture of bi-, tri-, and tetra-antennary species with 1-3-Sia residues, and some of the [3H]GlcNAc residues are directly covered with unlabeled Gal and Sia residues. This in vitro approach should recapitulate reactions that occur in the biosynthesis of N-linked oligosaccharides in the Golgi apparatus of the intact cell. Since the conditions during labeling do not permit inter-compartmental transport, the oligosaccharides produced should represent the biosynthetic capabilities of individual Golgi compartments. Evidence is presented for a functional association of GlcNAc transferases I, II, and alpha-mannosidase II, with separation from GlcNAc transferase IV and/or V. The structures also indicate co-compartmentalization of several GlcNAc transferase(s) with beta-galactosyltransferase(s) and sialyltransferase(s). The compartmental organization of the Golgi apparatus is discussed in light of these findings.

L25 ANSWER 45 OF 113 MEDLINE on STN DUPLICATE 29

AB The biological significance of glycosylation variants of pituitary glycoprotein hormones remains controversial because of the indirect methods usually employed to determine carbohydrate composition or structure as well as the use of unreliable biological/immunological ratio to determine bioactivity. We have previously characterized recombinant human TSH (rhTSH) secreted by Chinese hamster ovary cells attached to microcarrier beads in a large scale bioreactor after stable transfection of hCG alpha and hTSH beta minigenes. In the present study rhTSH has been used as a model to determine structure-function relationships of different isoforms of glycoprotein hormones. We have now produced greater than 200 mg rhTSH using a hollow fiber bioreactor. The highly purified rhTSH produced in the hollow fiber bioreactor (rhTSH-N) as well as rhTSH commercially produced in a large scale bioreactor (rhTSH-G) were quantitated by immunoassays, receptor binding assay, and amino acid analysis and further characterized by a variety of physico-biochemical methods, including chromatofocusing and carbohydrate analysis. rhTSH-G, rhTSH-N, as well as pituitary human TSH (phTSH) have been separated by chromatofocusing on a Mono P column into several isoforms with different pI values. Compositional analysis of the fractions showed higher sialic acid content in the more acidic rhTSH-G fractions. phTSH acidic isoforms showed higher total sulfate and sialic acid contents than the more basic fractions. The bioactivities of various TSH isoforms based on rigorous quantitation of mass by amino acid analysis determined in three different FRTL-5 cell bioassays showed that the more basic and less sialylated fractions of rhTSH-G were more active than the more acidic fractions. In contrast to the in **vitro** data, highly **sialylated** and acidic rhTSH-G isoforms showed longer plasma half-lives and higher in vivo bioactivity than the basic forms. These results indicate that secreted rhTSH, similar to intrapituitary phTSH, exists as a mixture of charge isoforms that are related at least in part to the degree of sialylation. The degree of sialylation, highly dependent on the bioreactor production conditions, appears to be the major factor affecting the charge heterogeneity, MCR, and bioactivity of rhTSH.

L25 ANSWER 47 OF 113 MEDLINE on STN DUPLICATE 31

AB Culture conditions affect the binding activity, charge heterogeneity, conformational stability, glycosylation, and pharmacokinetics of human monoclonal IgM HMAB-10058. The 10058 human/human/murine trioma was grown in serum-free airlift suspension culture, hollow fiber perfusion culture, or in nude mouse ascites. The ascites-produced antibody showed reduced

conformational stability, greater charge and glycoform heterogeneity, and a lower average degree of **sialylation** than the in **vitro** culture-produced material. Mean residence time after IV injection in rats was approximately 80-fold greater for the ascites culture-produced material, but specific binding activity was less than 5% of that for the airlift-produced material. In vitro culture in serum-supplemented media (in a hollow fiber perfusion reactor or in shake-flasks) resulted in antibody with pharmacokinetics intermediate between the serum-free airlift and ascites-produced materials. Incubation of airlift-produced antibody in ascites fluid also resulted in material with intermediate pharmacokinetics. Conclusions regarding the effect of culture conditions on antibody product cannot be generalized, as in vitro-produced antibody derived from two related cell lines (HMAB-10233 and HMAB-10390) had long mean residence times similar to that of ascites-produced HMAB-10058.

L25 ANSWER 55 OF 113 MEDLINE on STN DUPLICATE 39
AB Recombinant human tissue plasminogen activator expressed in murine epithelial cells carries, in part, sulfated N-glycans, which are characterized by the presence of a NeuAc alpha 3[SO4-6]Gal unit. In order to study the biosynthesis of this novel structural element, corresponding sulfated asialooligosaccharide alditols were resialylated in **vitro** using a crude **sialyltransferase** preparation from murine liver which was shown to contain Gal beta 1,3(4)GlcNAc alpha 2,3-sialyltransferase activity. Products were analyzed for transfer of sialic acid residues by anion-exchange HPLC. The results demonstrated that resialylation of SO4-6Gal-residues did not occur. Therefore, it may be concluded that transfer of the sulfate group is the final step in the biosynthesis of this structural epitope.

L25 ANSWER 72 OF 113 MEDLINE on STN DUPLICATE 52
AB The membrane-bound sialyltransferase obtained from Escherichia coli K-235 grown in a chemically defined medium (ideal for colominic acid production) was studied. The in vivo half-life calculated for this enzyme was 20 h. Kinetic tests revealed (at 33 degrees C and pH 8.3) hyperbolic behaviour with respect to CMP-Neu5Ac (Km250 microM) and a transition temperature at 31.3 degrees C. The enzyme was inhibited by NH4+, some divalent cations and by several agents that react with thiol groups. Detergents and fatty acids also inhibited the sialyltransferase activity. In vitro synthesis of colominic acid is strongly inhibited by CMP by blocking the incorporation of [14C]Neu5Ac into a protein-complex intermediate and therefore into free polymer. CDP and CTP also inhibited (91% and 84%) this enzyme activity whereas cytosine and cytidine had no effect. CMP inhibition corresponded to a competitive model the calculated Ki was 30 microM. Incubations of protein[14C]Neu5Ac with CMP, CDP and CTP led to de novo synthesis of CMP-[14C]Neu5Ac. The presence of colominic acid, which usually displaces the reaction equilibrium towards polymer synthesis, did not affect this de novo CMP-[14C]Neu5Ac formation. CMP also inhibited in vivo colominic acid biosynthesis.

L25 ANSWER 75 OF 113 MEDLINE on STN DUPLICATE 54
AB Using 500-MHz 1H NMR spectroscopy we have investigated the branch specificity that bovine colostrum CMP-NeuAc:Gal beta 1----4GlcNAc-R alpha 2----6-sialyltransferase shows in its sialylation of bi-, tri-, and tetraantennary glycopeptides and oligosaccharides of the N-acetyllactosamine type. The enzyme appears to highly prefer the galactose residue at the Gal beta 1----4GlcNAc beta 1----2Man alpha 1----3 branch for attachment of the 1st mol of sialic acid in all the acceptors tested. The 2nd mol of sialic acid becomes linked mainly to the Gal beta 1----4GlcNAc beta 1----2Man alpha 1----6 branch in bi- and triantennary substrates, but this reaction invariably proceeds at a much lower rate. Under the conditions employed, the Gal beta 1----4GlcNAc beta 1----6Man alpha 1----6 branch is extremely resistant to alpha 2----6-sialylation. A higher degree of branching of the acceptors leads to a decrease in the rate of sialylation. In particular, the presence of the Gal beta

1----4GlcNAc beta 1----6Man alpha 1----6 branch strongly inhibits the rate of transfer of both the 1st and the 2nd mol of sialic acid. In addition, it directs the incorporation of the 2nd mol into tetraantennary structures toward the Gal beta 1----4GlcNAc beta 1----4Man alpha 1----3 branch. In contrast, the presence of the Gal beta 1----4GlcNAc beta 1----4Man alpha 1----3 branch has only minor effects on the rates of sialylation and, consequently, on the branch preference of sialic acid attachment. Results obtained with partial structures of tetraantennary acceptors indicate that the Man beta 1----4GlcNAc part of the core is essential for the expression of branch specificity of the sialyltransferase. The sialylation patterns observed in vivo in glycoproteins of different origin are consistent with the in **vitro** preference of alpha 2----6-**sialyltransferase** for the Gal beta 1----4GlcNAc beta 1----2Man alpha 1----3 branch. Our findings suggest that the terminal structures of branched glycans of the N-acetyllactosamine type are the result of the complementary branch specificity of the various glycosyltransferases that are specific for the acceptor sequence Gal beta 1----4GlcNAc-R.

L25 ANSWER 77 OF 113 MEDLINE on STN DUPLICATE 56

L25 ANSWER 81 OF 113 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN

L25 ANSWER 82 OF 113 MEDLINE on STN DUPLICATE 58

AB Prokaryotic derived probes that specifically recognize alpha-2,8-ketosidically linked polysialosyl units were developed to identify and study the temporal expression of these unique carbohydrate moieties in developing neural tissue (Vimr, E. R., McCoy, R. D., Vollger, H. F., Wilkison, N. C., and Troy, F. A. (1984) Proc. Natl. Acad. Sci. U.S.A. 81, 1971-1975). These polysialosyl units cap N-linked oligosaccharides of the complex-type on neural cell adhesion molecules (N-CAM). A Golgi-enriched fraction from 20-day-old fetal rat brain contains a membrane-associated sialyltransferase that catalyzes the incorporation of [14C]N-acetylneuraminic acid [(14C]NeuNAc) from CMP-[14C] NeuNAc into polymeric products. At pH 6.0, 84 pmol of NeuNAc mg of protein-1 h-1 were incorporated. In sodium dodecyl sulfate-polyacrylamide gels, the major radiolabeled species migrated with a mobility expected for N-CAM. A bacteriophage-derived endoneuraminidase specific for polysialic acid was used to demonstrate that at least 20-30% of the [14C]NeuNAc was incorporated into alpha-2,8-linked polysialosyl units. This was confirmed by structural studies which showed that the endoneuraminidase-sensitive brain material consisted of multimers of sialic acid. The addition of a partially purified preparation of chick N-CAM to the membranous sialyltransferase stimulated sialic acid incorporation 3-fold. The product of this reaction was also sensitive to endoneuraminidase and contained alpha-2,8-linked polysialosyl chains, thus showing that N-CAM can serve as an exogenous acceptor for **sialylation** in **vitro.** Sialic acid incorporated into adult rat brain membranes was resistant to endoneuraminidase, indicating that the poly-alpha-2,8-sialosyl sialyltransferase activity is restricted to an early developmental epoch. It is recommended that the enzyme described here be designated CMP-NeuNAc:poly-alpha-2,8-sialosyl sialyltransferase and the trivial name poly-alpha-2,8-sialosyl sialyltransferase be adopted.

L25 ANSWER 83 OF 113 MEDLINE on STN DUPLICATE 59

AB A **sialyltransferase** involved in the biosynthesis in **vitro** of LD1c (NeuAc alpha 2-8NeuGc alpha 2-3Gal beta 1-4Glc-NAc beta 1-3Gal beta 1-4Glc-Cer) has been characterized from 9 to 11-day-old embryonic chicken brains. The CMP-[14C]NeuAc:LM1(alpha 2-8)sialyltransferase (SAT-2) sedimented (75%) at the junction of 0.75 and 1.2 M on a discontinuous sucrose density gradient when still membrane bound. In addition to the biosynthesis of LD1c, the detergent-solubilized (0.4% Nonidet P-40) preparation also catalyzes the transfer of sialic acid to O-8 of sialic acid in GM3 to form GD3 (NeuAc alpha 2-8NeuAc alpha 2 -

3Gal beta 1 - 4Glc - Cer). Substrate inhibition studies indicated that these two reactions are probably catalyzed by the same enzyme, SAT-2. The kinetic parameters of SAT-2 activity were determined. The Km values were 70 and 63 microM with CMP-[14C]NeuAc and LM1, respectively, when the detergent-solubilized supernatant fraction was used as enzyme source. The (alpha 2-8)-linkage between the terminal and penultimate sialic acids was determined using nonradioactive CMP-NeuAc and [Ac-14C]LM1 as substrates (Higashi, H., and Basu, S. (1982) Anal. Biochem. 120, 159-164) for the enzyme, followed by identification of the permethylated [14C]sialic acid of the product by radioautography. At 0.5 mM N-ethylmaleimide, the SAT-2 activity was inhibited 50% whereas SAT-1 and SAT-3 activities (Basu, M., Basu, S., Stoffyn, A., and Stoffyn, P. (1982) J. Biol. Chemical 257, 12765-12769) remained uninhibited.

L25 ANSWER 85 OF 113 MEDLINE on STN DUPLICATE 61

AB Rat liver Golgi apparatus are shown to have a CMP-N-acetylneuraminate: N-acetylglucosaminide (alpha 2----6)-sialyltransferase which catalyzes the conversion of the human milk oligosaccharide LS-tetrasaccharide-a (NeuAc alpha 2----3Gal beta 1---- 3GlcNAc beta 1----3Gal beta 1----4Glc) to disialyllacto -N- tetraose containing the terminal sequence: (formula: see text) found in N-linked oligosaccharides of glycoproteins. The N-acetylglucosaminide (alpha 2----6)-sialyltransferase has a marked preference for the sequence NeuAc alpha 2----3-Gal beta 1---- 3GlcNAc as an acceptor substrate. Thus, the order of addition of the two sialic acids in the disialylated structure shown above is proposed to be first the terminal sialic acid in the NeuAc alpha 2----3Gal linkage followed by the internal sialic acid in the NeuAc alpha 2---- 6GlcNAc linkage. **Sialylation** in **vitro** of the type 1 branches (Gal beta 1---- 3GlcNAc -) of the N-linked oligosaccharides of asialo prothrombin to produce the same disialylated sequence is also demonstrated.

L25 ANSWER 87 OF 113 MEDLINE on STN DUPLICATE 63

AB A sialyltransferase activity present in 7- to 12-day-old embryonic chicken brain catalyzes the transfer of sialic acid from CMP-sialic acid to the terminal galactose residue of [3H]nLcOse4Cer ([3H]Gal(beta 1-4).GlcNAc(beta 1-3)Gal(beta 1-4)Glc-Cer) to form NeuAc(alpha 2-3)-[3H]nLcOse4Cer (LM1 ganglioside). The product is sialidase-labile (96%), and the NeuAc group is linked to O-3 of the terminal galactose residue. The (alpha 2-3) linkage between sialic acid and the terminal galactose was determined on the basis of identification of 2,4,6-tri-O-methyl[3H]galactose obtained after hydrolysis of the permethylated enzymatic product. The CMP-sialic acid:nLcOse4Cer (alpha 2-3)sialyltransferase activity sediments (90%) at the junction of 1.2 M and 1.5 M on a discontinuous sucrose density gradient when still membrane bound (insoluble in 0.2% Triton X-100). The enzyme preparation also catalyzes the transfer of sialic acid from CMP-sialic acid to O-3 of GgOse4Cer (Gal(beta 1-3)GalNAc(beta 1-4)Gal(beta 1-4)Glc-Cer) to form NeuAc (alpha 2-3)GgOse4Cer (GM1b). Substrate inhibition studies indicate that these two reactions are probably catalyzed by the same enzyme.

L25 ANSWER 94 OF 113 MEDLINE on STN DUPLICATE 68

L25 ANSWER 96 OF 113 MEDLINE on STN DUPLICATE 69

AB In order to study structure-function relationships of lysosomal enzymes, human liver beta-N-acetylhexosaminidase (2-acetamido-2-deoxy-beta-D-hexoside acetamidodeoxyhexohydrolase, EC 3.2.1.52) has been purified by an extraction/affinity chromatography/ion-exchange procedure. The isoenzymes A and B, native as well as neuraminidase-treated, were incubated with a partially purified preparation of bovine colostrum sialyltransferase (CMP-N-acetylneuraminate: D-galactosyl-glycoprotein N-acetylneuraminyltransferase, EC 2.4.99.1). Native beta-N-acetylhexosaminidases were found to be poor acceptors for the sialyltransferase used. However, incorporation of sialic acid into neuraminidase-treated beta-N-acetylhexosaminidase A and B amounted to a 58

to 72% saturation of the theoretical acceptor sites, respectively. The acceptor specificity of the sialyltransferase suggests that Gal beta(1 leads to 4)-GlcNAc units may be present on at least part of the beta-N-acetylhexosaminidase A and B molecules. However, oligomannosidic-type chains may also occur on the lysosomal enzyme, as shown by sugar composition of the enzyme. The presence and/or amount of sialic acid residues does not appear to affect the kinetic properties of beta-N-acetylhexosaminidase A and B towards 4-methylumbelliferyl glycoside substrate.

L25 ANSWER 97 OF 113 MEDLINE on STN DUPLICATE 70

AB Porcine liver microsomes are capable of transferring sialic acid from CMP-NeuAc to [14C]galactosylated ovine submaxillary asialo-mucin, porcine submaxillary asialo/afuco-mucin and ganglioside GM1. The specificity of the porcine liver sialyltransferase (CMP-N-acetylneuraminate: D-galactosyl-glycoprotein N-acetylneuraminyltransferase, EC 2.4.99.1) towards the first acceptor, [14C]Gal-GalNAc-protein, was investigated by means of methylation studies on the oligosaccharides changes cleft-off from the sialylated product glycoprotein by beta-elimination under reductive conditions. It appeared that sialic acid was transferred solely to position C-3 of galactose residues on Gal beta(1 leads to 3)GalNAc disaccharide units. Transfer to GalNAc residues was completely absent. Competition experiments and heat activation studies suggested that the same enzyme also converts ganglioside GM1 to ganglioside GD1a. Therefore, this porcine liver sialyltransferase can be designated as a Gal beta(1 leads to 3)GalNAc-R alpha(2 leads to 3) sialyltransferase.

L25 ANSWER 98 OF 113 MEDLINE on STN DUPLICATE 71

AB Ovine submaxillary asialo-mucin was [14C]**sialylated** in **vitro** using a porcine liver cell-free preparation. The oligosaccharide chains were cleaved from the product glycoprotein by beta-elimination under reductive conditions, fractionated by gel filtration on Bio-Gel P-2 and characterized by thin-layer chromatography. The structure of the product chain was studied by periodate oxidation and analysis of the peeling products formed in the beta-elimination step. It appeared that [14C]-sialic acid had been introduced exclusively to the galactose residues of Gal beta(1 leads to 3)GalNAc disaccharide units occurring on the mucin as minor chains. No indication for a transfer to GalNAc residues on this glycoprotein was obtained. In agreement with this result sialyltransferase activities of porcine, rat, human and canine liver with Gal beta (1 leads to 3)GalNAc-protein acceptors were invariably much higher than those with ovine submaxillary asialo-mucin. When the asialo-mucin had been [14C]sialylated by an ovine submaxillary gland cell-free preparation analysis of the product oligosaccharide chain revealed the introduction of [14C]sialic acid to position C-6 on the GalNAc residues. The specificity of this transfer was reflected by the very high sialyltransferase activities of gland preparations with Gal beta (1 leads to 3)GalNAc-protein as well as GalNAc-protein acceptors. Mixed enzyme experiments indicated that the difference in liver and gland ovine submaxillary asialo-mucin sialyltransferase activities was not due to the presence of a specific inhibitor in the liver or an activator in the gland. It is concluded that porcine liver and likely liver of rat, man and dog contains a Gal beta (1 leads to 3)GalNAc-protein sialyltransferase, which is involved in the sialylation of O-glycosidically linked carbohydrate chains on serum glycoproteins. GalNAc-protein sialyltransferase activity, which richly occurs in ovine submaxillary gland, however, appears to be lacking from liver tissue.

L25 ANSWER 101 OF 113 BIOSIS COPYRIGHT 2004 BIOLOGICAL ABSTRACTS INC. on STN DUPLICATE 73

AB Partial in **vitro sialylation** of biantennary and triantennary glycopeptides of α1-acid glycoprotein using colostrum β-galactoside α(2 → 6) sialyltransferase followed by high resolution 1H-NMR spectroscopic analysis of the isolated products

enabled the assignment of the Galβ (1 → 4) GlcNAcβ (1 → 2) Manα (1 → 3) Man branch as the most preferred substrate site for sialic acid attachment. The Galβ (1 → 4) GlcNAcβ (1 → 2) Manα (1 → 6) Man branch appeared to be much less preferred and the Galβ (1 → 4) GlcNacβ (1 → 4) Manα (1 → 3) Man sequence of triantennary structures was of intermediate preference for the sialyltransferase. The specificity of the β-galactoside α(2 → 6) sialyltransferase is thus shown to extend to structural features beyond the terminal N-acetyllactosamine units on the oligosaccharide chains of serum glycoproteins.

L25 ANSWER 102 OF 113 HCAPLUS COPYRIGHT 2004 ACS on STN
AB The product formed by the action of porcine liver microsome sialyltransferase (I) on desialylated ovine submaxillary mucin in the presence of CMP-N-acetylneuraminate-14C (II) was identified. Porcine I transferred acetylneuraminate from II exclusively to the galactose residues of Gal-GalNAc disaccharide units occurring as the minor chains of ovine desialylated mucin and not to the abundant N-acetylneuraminate galactose monosaccharide units. The probable structure of the chain formed is α-NeuAc-(2→3)-β-D-Gal-(1→3)-D-GalNAc.
I of ovine submaxillary microsomes formed a similar chain as a minor product in addition to the major product chain, α-NeuAc-(2→6)-D-GalNAc.

L25 ANSWER 106 OF 113 MEDLINE on STN DUPLICATE 75
AB The terminal galactosyl units of desialylated alpha1-acid glycoprotein were selectively labeled with tritium by a galactose oxidase/NaB3H4 procedure. The 3H-labeled glycoprotein was effective as an acceptor in sialytransferase reactions catalyzed by rat liver microsomes in vitro with unlabeled CMP-N-acetyl-neuramininic acid as sialic acid donor. Permethylation/hydrolysis of glycopeptides derived from the resialylated 3H-labeled glycoprotein yielded radioactive 2,3,4-trimethylgalactose indicating that rat liver microsomes are capable of transferring sialic acid to position C-6 of the terminal galactosyl units of desialylated alpha1-acid glycoprotein. No indication was obtained for transfer of sialic acid to other positions. This result is discussed in view of the multiplicity of positions of attachment of sialic acid to galactosyl residues in native alpha1-acid glycoprotein.

L25 ANSWER 107 OF 113 MEDLINE on STN DUPLICATE 76
AB Neuraminidase treatment of mouse mammary tumor virus, Rauscher murine leukemia virus, and Mason-Pfizer monkey virus resulted in loss of their capacity to inhibit hemagglutination of influenza virus. Hemagglutination-inhibition activity of these RNA tumor viruses could be restored by in **vitro** resialylation catalyzed by **sialyl** transferase. The major glycoprotein in the intact envelope of desialylated and, to some extent, native virions could be specificallly labeled in vitro with CMP-(14C) sialic acid. These studies further characterize the individual glycoproteins of mouse mammary tumor virus, Rauscher murine leukemia virus, and Mason-Pfizer monkey virus.

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